

EMC Test Report

Project Number: 4266230

Report Number: 4266230EMC02

Revision Level: 0

Client: Attenti

Equipment Under Test: 2-Piece Electronic Monitor

Model Name: RTCVZ

Model Number (HVIN): 24014VL

FCC ID: NC3-24014VL

IC ID: 23669-24014VL

FCC Rule Parts: Part 2, Part 27, Part 24E

Industry Canada: RSS-GEN, Issue 4

RSS-130, Issue 1

RSS-133, Issue 6

Report issued on: 19 February 2018

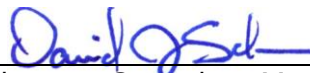
Test Result: Compliant

Tested by:



Jeremy Pickens, Senior EMC Engineer

Reviewed by:



David Schramm, Operations Manager

Remarks: This report details the results of the testing carried out on one sample, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

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1 Summary of Test Results

Reference Sections		Test Description	Test Limit	Test Condition	Test Result
FCC	IC				
2.1046	RSS-GEN (6.12)	Conducted Output Power	N/A	Conducted	NS(1)
24.232(d) 27.50(d)(5)	RSS-130 (4.4) RSS-133 (6.4)	Peak-to-Average Ratio	<13 dB		NS(1)
2.1049 24.238(a)	RSS-GEN (6.6) RSS-133 (2.3)	Occupied Bandwidth	N/A		NS(1)
2.1051 24.238(a) 27.53(c)(2) 27.53(h) 27.53(m)(4)	RSS-130 (4.6.1) RSS-133 (6.5.1)	Band Edge / Conducted Spurious Emissions	< 43 +10log ₁₀ (P _[Watts]) at band edge and for all out of band emissions		NS(1)
--	RSS-130 (4.4)	Effective Radiated Power	< 5 Watts max ERP		NS(1)
24.232(c) 27.50(d)(4) 27.50(h)	RSS-133 (6.4)	Effective Isotropic Radiated Power	< 1 Watts max EIRP		NS(1)
2.1053 24.238(a) 27.53(c)(2) 27.53(h)	RSS-GEN (6.13) RSS-130 (4.6) RSS-133 (6.5.1)	Radiated Spurious Emissions	< 43 +10log ₁₀ (P _[Watts]) at band edge and for all out of band emissions		Pass
2.1055 24.238(a) 27.5(b) 27.5(h) 27.54	RSS-GEN (6.11) RSS-130 (4.3) RSS-133 (6.3)	Frequency Stability	<2.5 ppm		NS(1)

- 1) NS – Not under the scope of this evaluation. The purpose of this testing was to evaluate the LTE spurious emissions from an integrated, certified module.

1.1 Modifications Required to Compliance

None

2 General Information

2.1 Client Information

Name: Attenti
Address: 1838 Gunn Highway
City, State, Zip, Country: Odessa, FL 33556

2.2 Test Laboratory

Name: SGS North America, Inc.
Address: 620 Old Peachtree Road NW, Suite 100
City, State, Zip, Country: Suwanee, GA 30024, USA

2.3 General Information of EUT

Type of Product: 2-Piece Electronic Monitor
Model Name: RTCVZ
Model Number: 24014VL
Serial Number: Unit P25

Rated Voltage: 3.7 Vdc,
Test Voltage: Internal, 3.7Vdc Li-Ion Battery

Tx Frequency Range: 1850 - 1910 MHz (LTE Band 2)
1710 – 1755 MHz (LTE Band 4)
777 – 787MHz (LTE Band 13)

FCC Classification: PCS Licensed Transmitter PCB
Type: Pre Production

Sample Received Date: 29 January 2018
Dates of testing: 29 - 30 January 2018

2.4 Operating Modes and Conditions

During spurious emissions testing, test commands were used to configure the device for constant transmission at each of the lowest, middle, and highest channels for each band.

3 Radiated Spurious Emissions

3.1 Test Result

Test Description	Basic Standards		Test Result
Radiated Spurious Emissions	2.1053 22.917(a) 24.238(a) 27.53(c)(2) 27.53(h) ANSI/TIA-603-D-2010	RSS-GEN (6.13) RSS-130 (4.6) RSS-132 (5.5) RSS-133 (6.5.1) RSS-139 (6.5.1)	Pass

3.2 Test Method

The levels are measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. On any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least $43 + 10 \log (P)$ dB. Compliance is based on the use of a spectrum analyzer employing a resolution bandwidth of 1 MHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of a least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emissions bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

The EUT was manipulated through each of its three orthogonal axes with the measurement oriented in both vertical and horizontal polarizations.

Using test commands, the measurements were performed at the low, middle, and high channels.

3.3 Test Site

SGS 3m Chamber, Suwanee, GA (validated to ANS C63.4: 2014 below and above 1GHz)

Environmental Conditions

Temperature: 23.30 °C
Relative Humidity: 43.2 %
Atmospheric Pressure: 98.1 kPa

3.4 Test Equipment

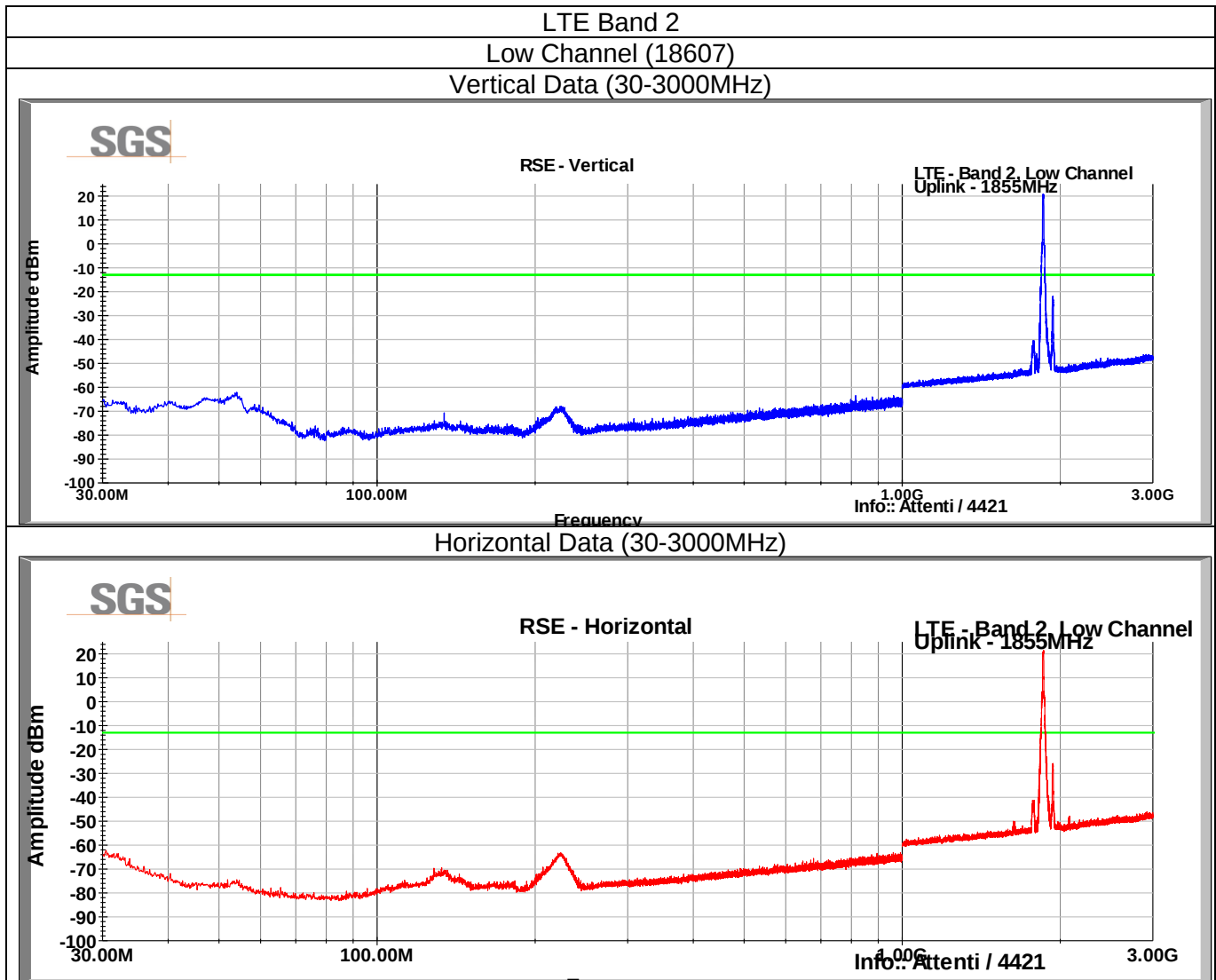
Test End Date: 31-Jan-2018

Tester: JOP

Equipment	Model	Manufacturer	Asset Number	Cal Due Date
EMI TEST RECEIVER	ESU8	ROHDE & SCHWARZ	B085759	25-Jul-2018
ANTENNA, BILOG	JB6	SUNOL	B079689	16-Oct-2018
RF CABLE	SF106	HUBER & SUHNER	B079712	24-Jul-2018
RF CABLE	NFS-290-78.7-NFS	FLORIDA RF LABS	B095019	24-Jul-2018
RF CABLE	UC-N-MM-78	MAURY MICROWAVE	17017	25-Jul-2018
RF CABLE	SUCOFLEX 100	HUBER & SUHNER	B108523	24-Jul-2018
LOW NOISE AMPLIFIER	TS-PR18	ROHDE & SCHWARZ	B094463	22-Feb-2018
ANTENNA, DRG HORN (MEDIUM)	3117	ETS LINDGREN	B079691	27-Jul-2018
RF CABLE	UC-N-MM-275	MAURY MICROWAVE	17015	25-Jul-2018
RF CABLE	SF106	HUBER & SUHNER	B079713	24-Jul-2018
RF CABLE	104PE	HUBER & SUHNER	B079793	24-Jul-2018
LOW NOISE AMPLIFIER	TS-PR18	ROHDE & SCHWARZ	15003	28-Jul-2018
FILTER, HIGH PASS (>2800MHZ)	HPM50111	MICRO-TRONICS	B085747	27-Jul-2018
FILTER, HIGH PASS (>1150MHZ)	HPM50108	MICRO-TRONICS	B079802	27-Jul-2018
EMI TEST RECEIVER	ESU40	ROHDE & SCHWARZ	B079629	25-Apr-2018

- Unless otherwise noted, equipment is on a 1 year calibration cycle.

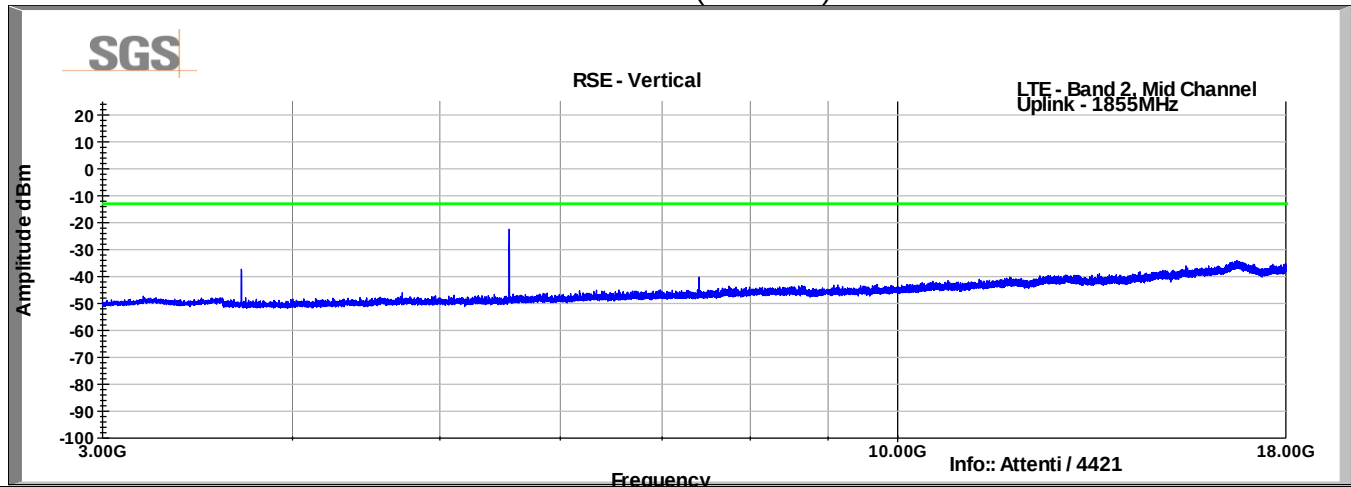
3.5 Test Data



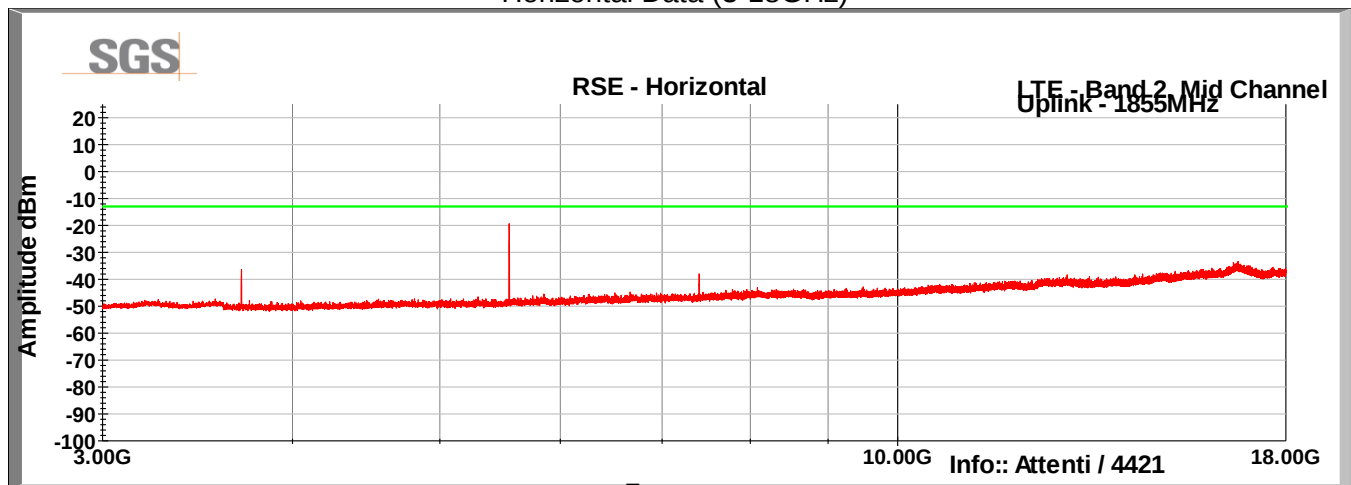
LTE Band 2

Low Channel (18607)

Vertical Data (3-18GHz)



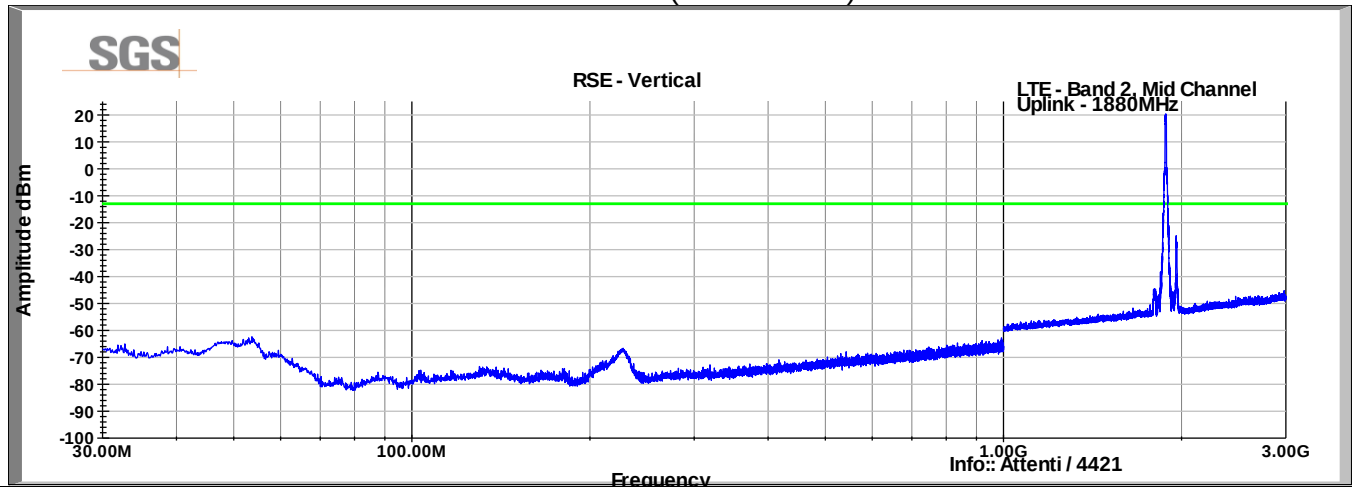
Horizontal Data (3-18GHz)



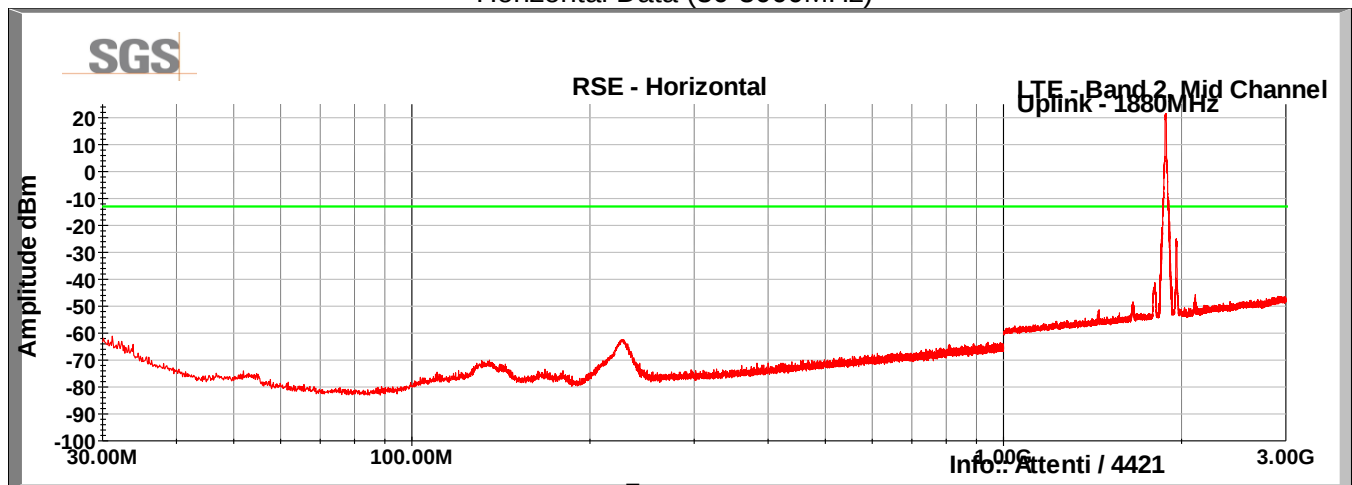
LTE Band 2

Mid Channel (18900)

Vertical Data (30-3000MHz)



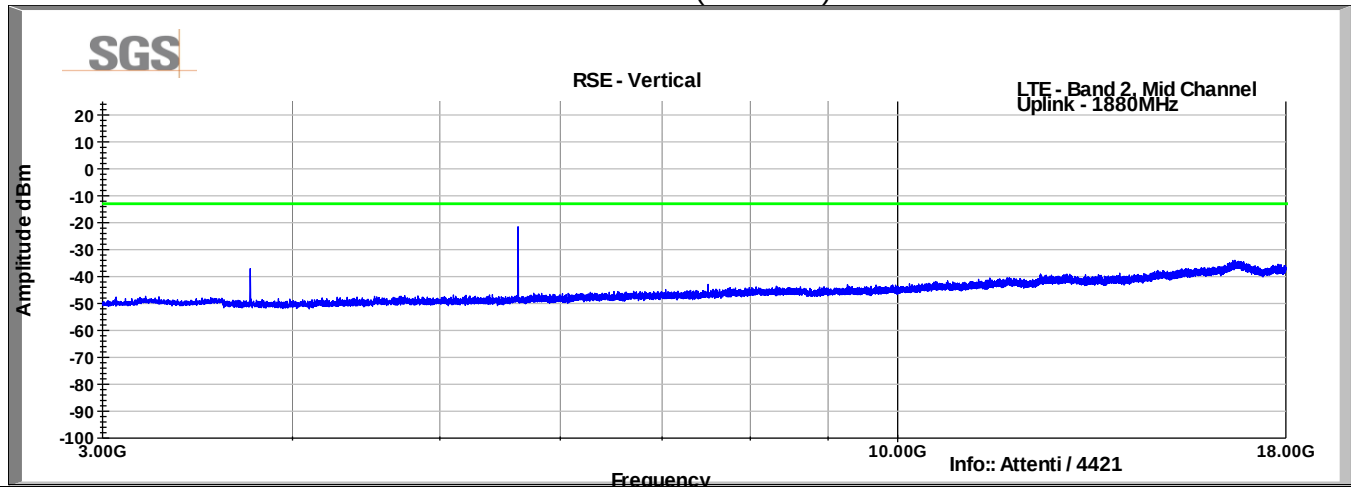
Horizontal Data (30-3000MHz)



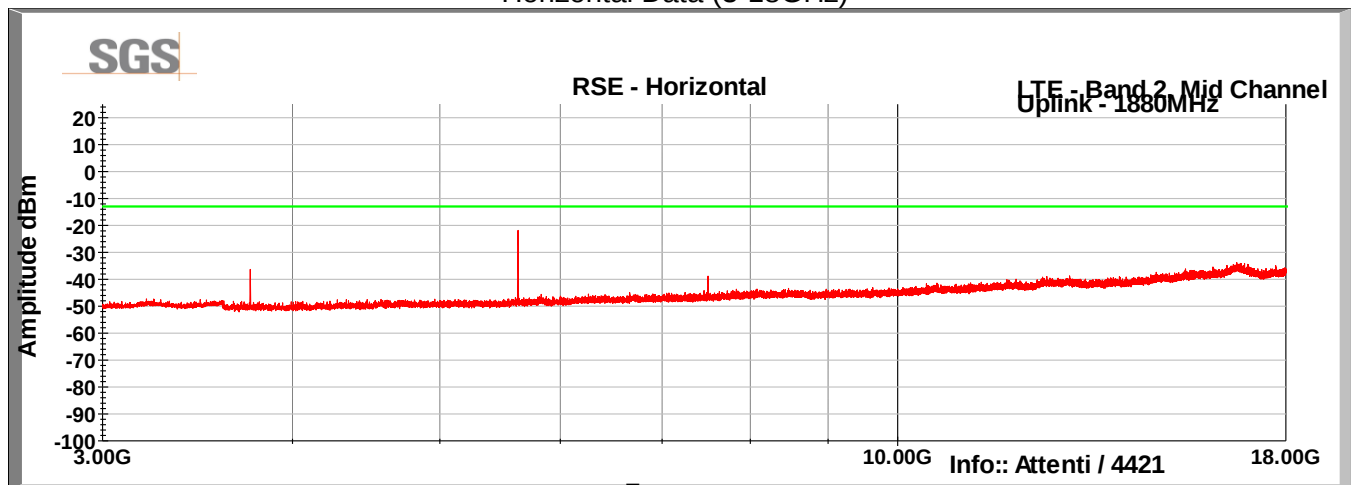
LTE Band 2

Mid Channel (18900)

Vertical Data (3-18GHz)



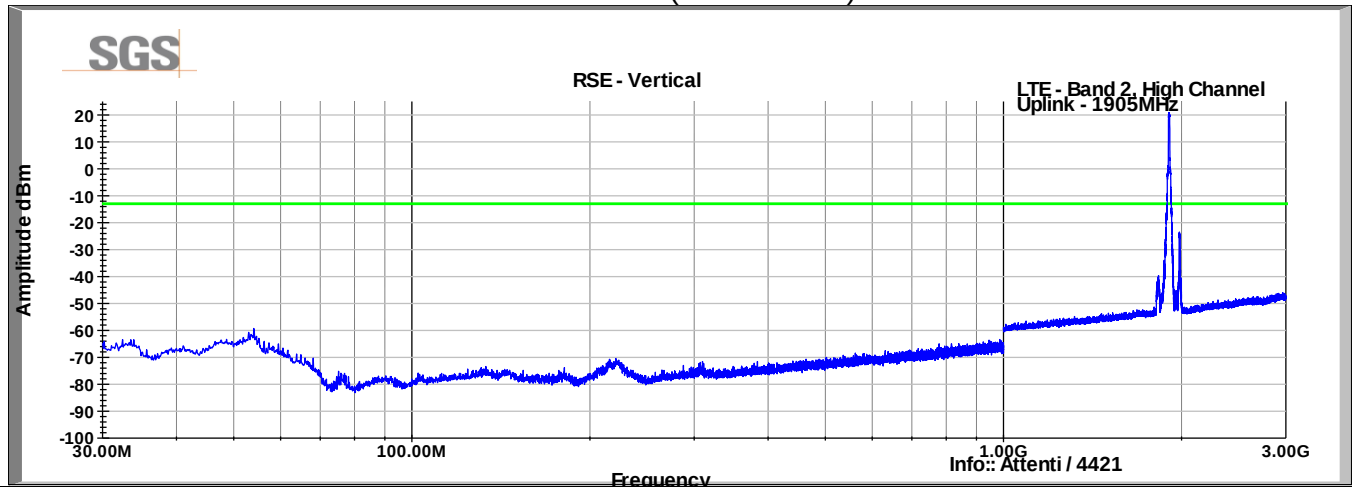
Horizontal Data (3-18GHz)



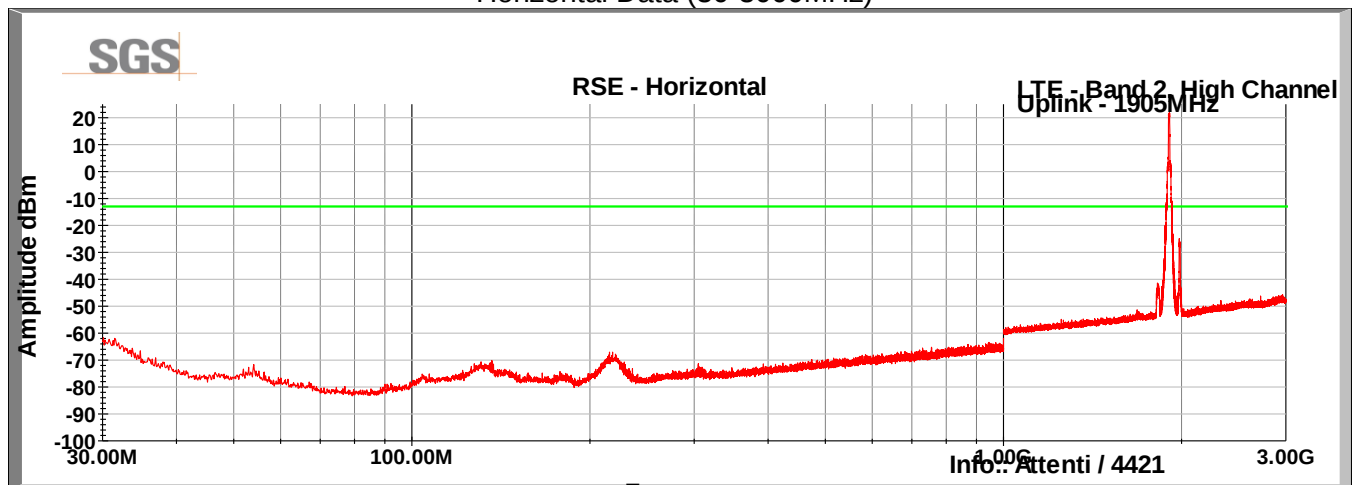
LTE Band 2

High Channel (19193)

Vertical Data (30-3000MHz)



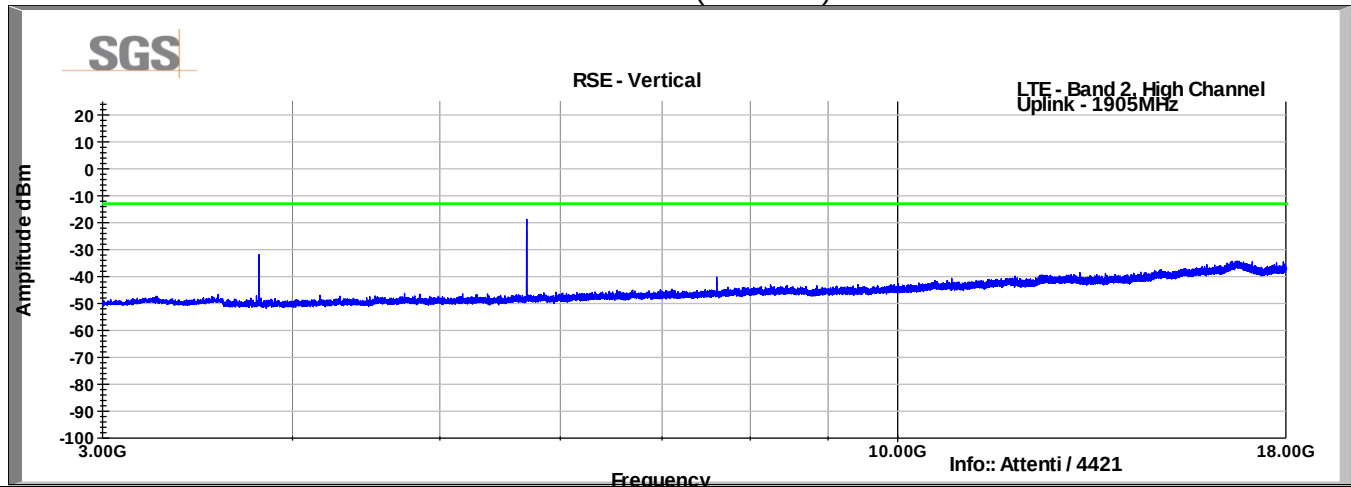
Horizontal Data (30-3000MHz)



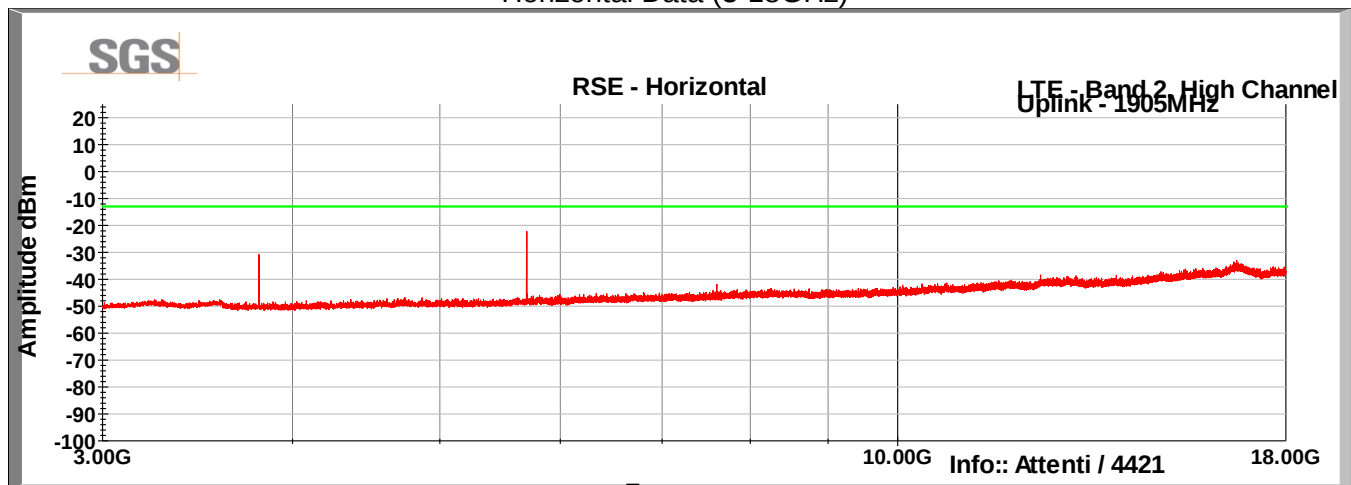
LTE Band 2

High Channel (19193)

Vertical Data (3-18GHz)



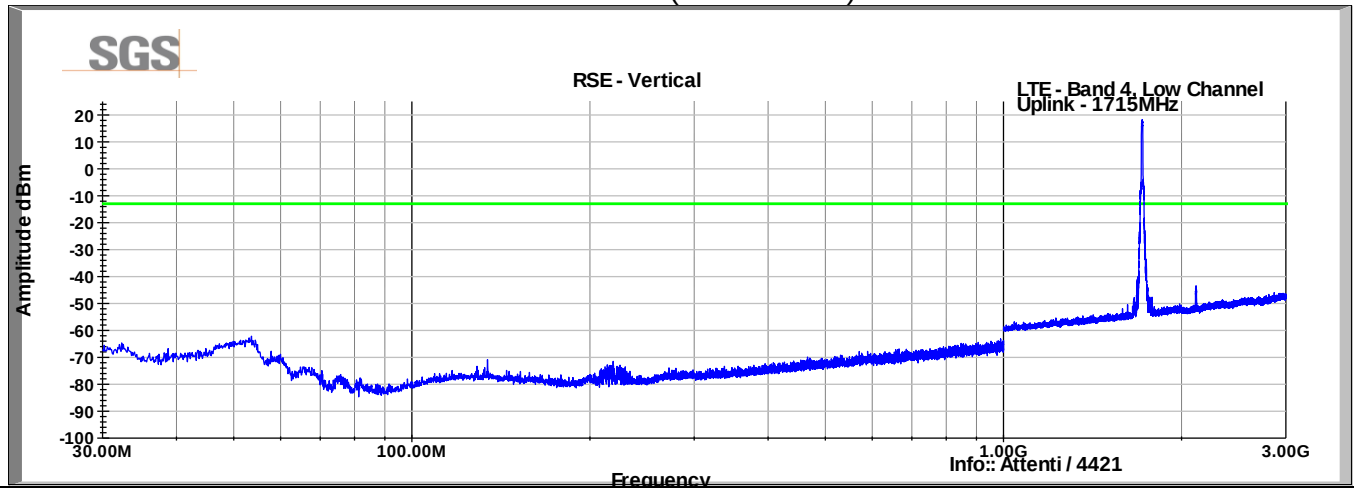
Horizontal Data (3-18GHz)



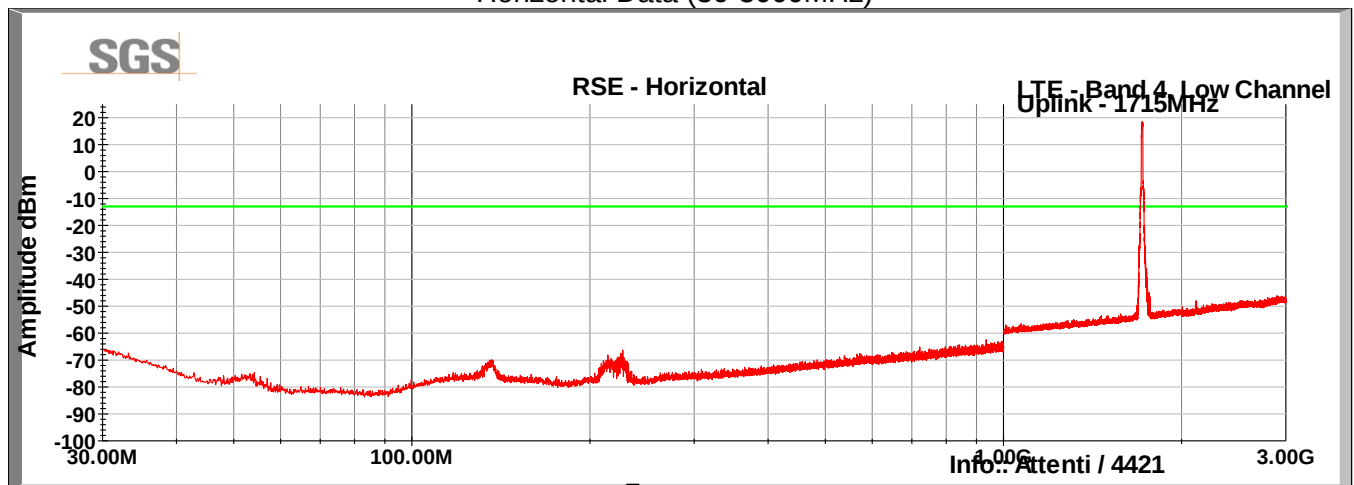
LTE Band 4

Low Channel (19957)

Vertical Data (30-3000MHz)



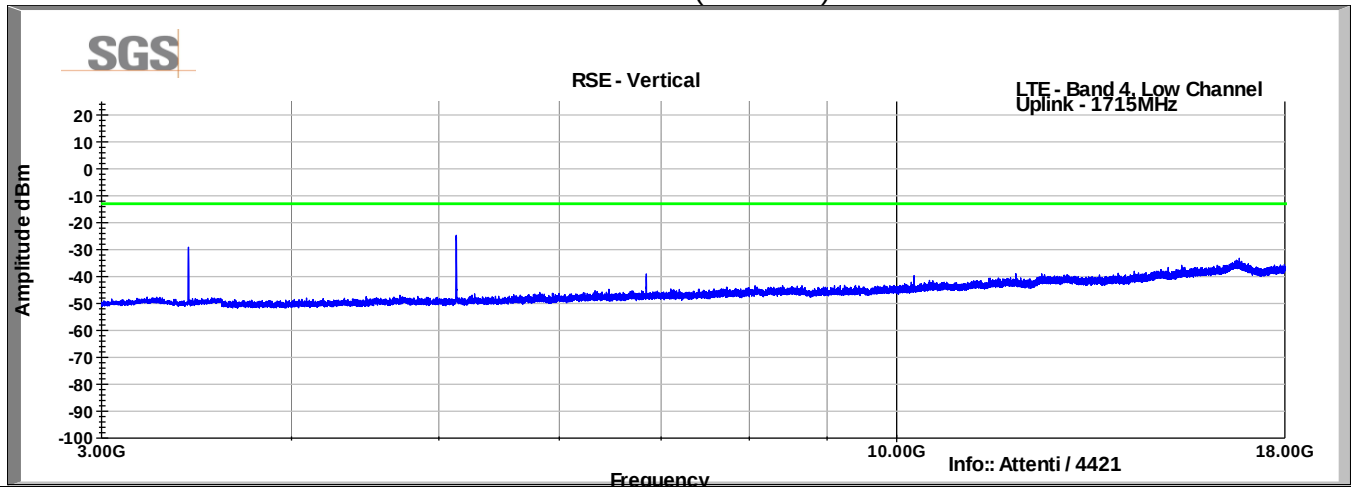
Horizontal Data (30-3000MHz)



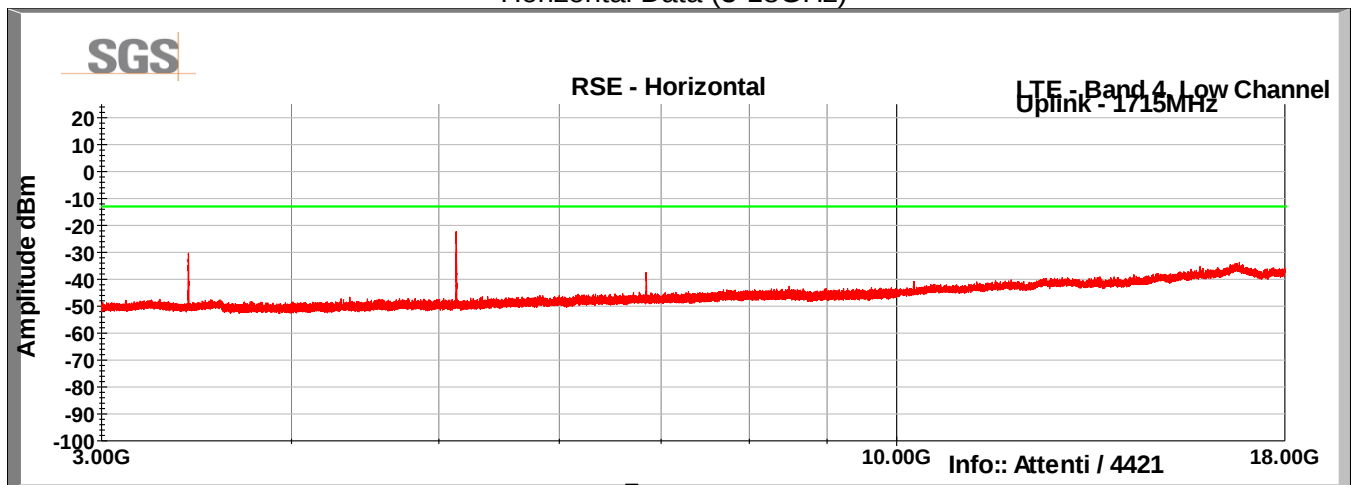
LTE Band 4

Low Channel (19957)

Vertical Data (3-18GHz)



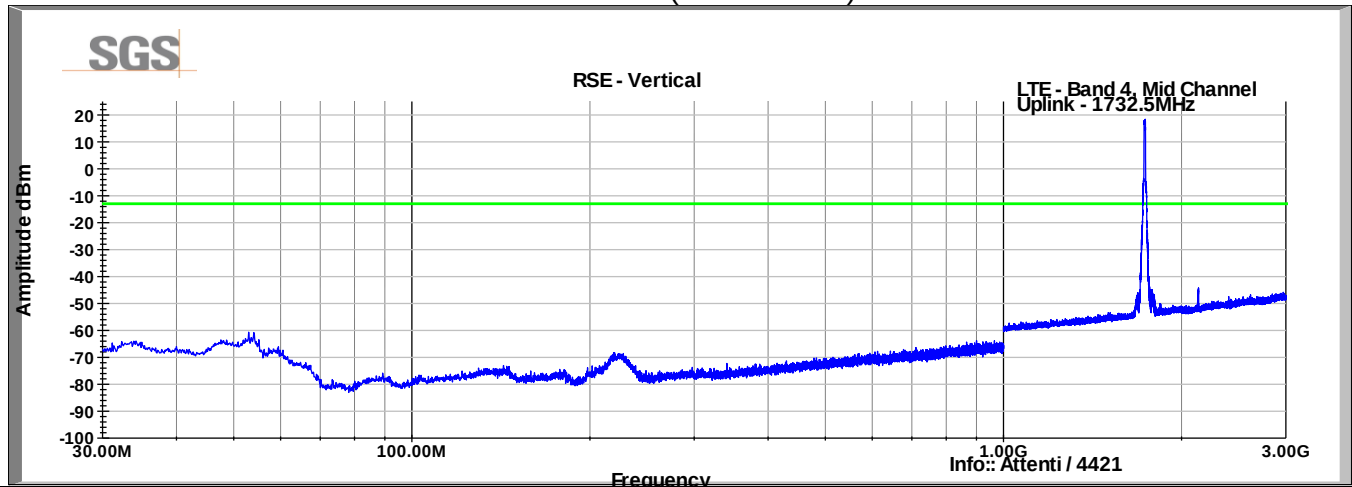
Horizontal Data (3-18GHz)



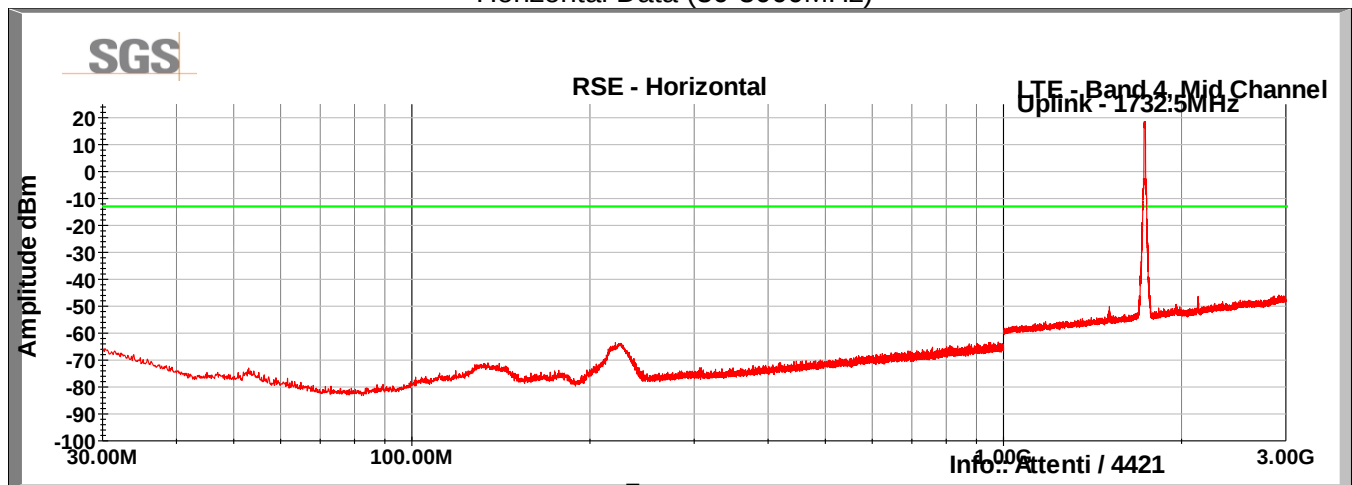
LTE Band 4

Mid Channel (20175)

Vertical Data (30-3000MHz)



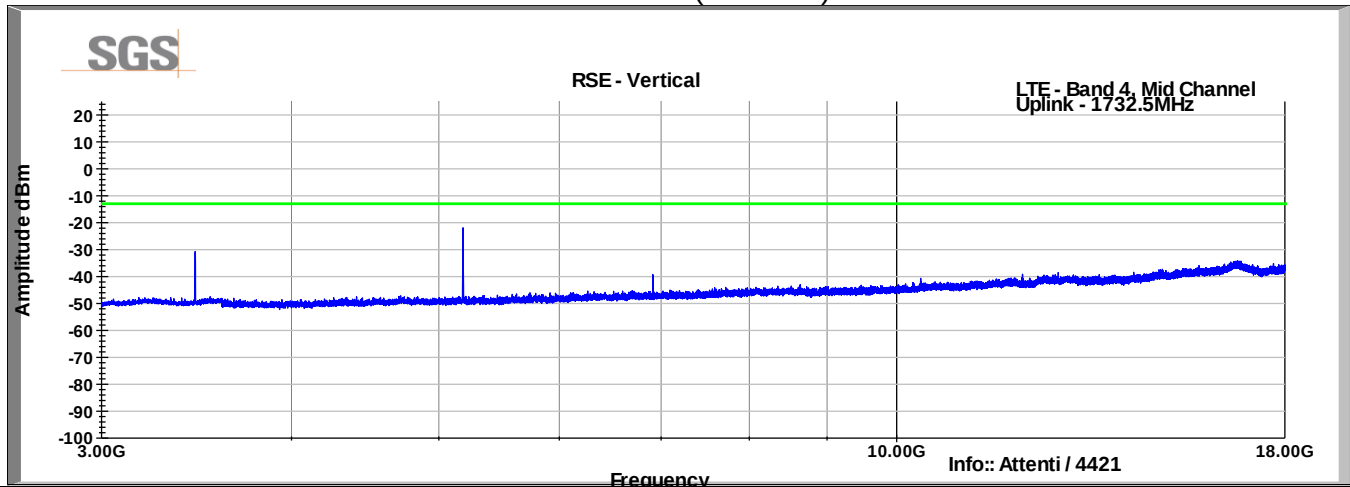
Horizontal Data (30-3000MHz)



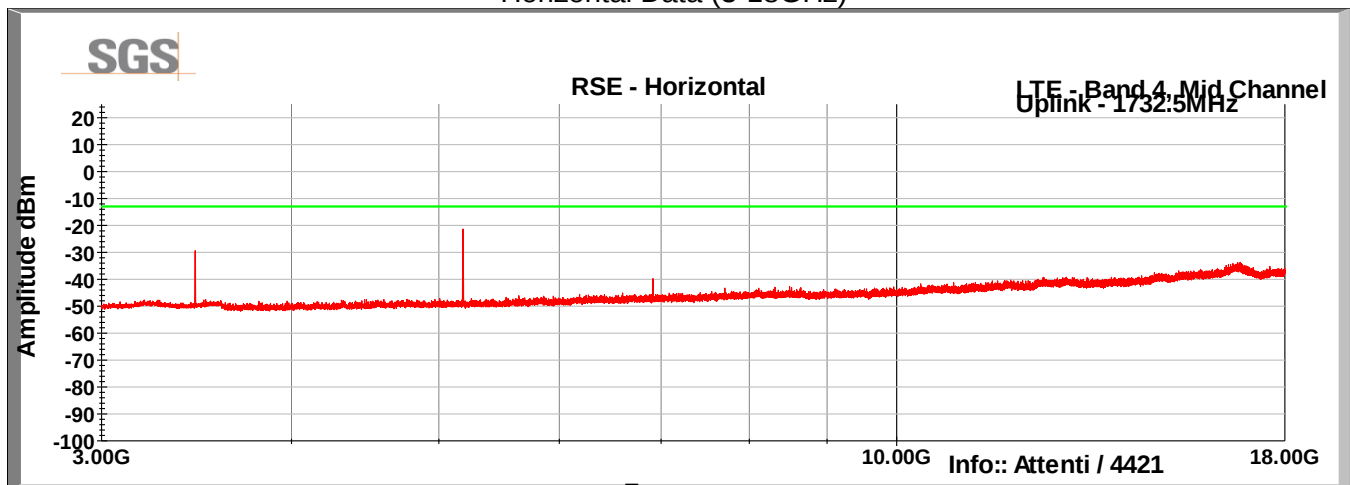
LTE Band 4

Mid Channel (20175)

Vertical Data (3-18GHz)



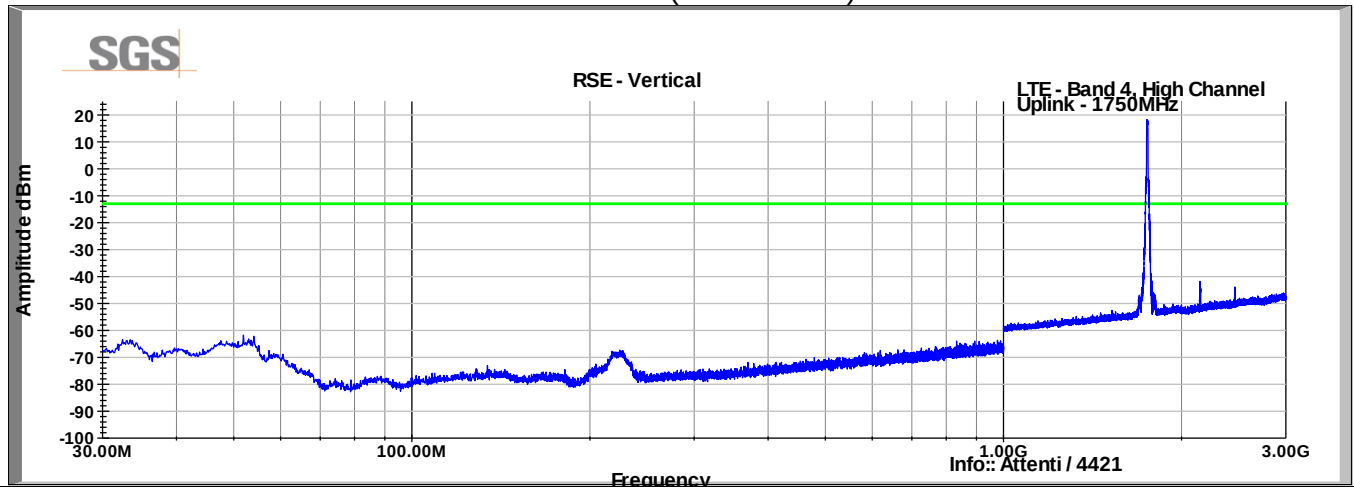
Horizontal Data (3-18GHz)



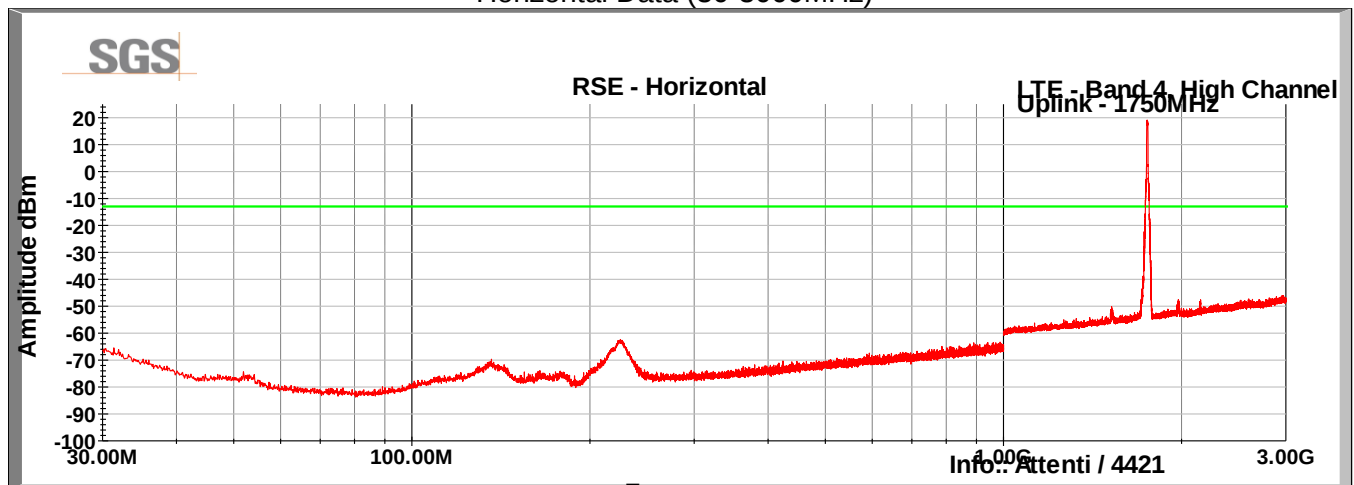
LTE Band 4

High Channel (20393)

Vertical Data (30-3000MHz)



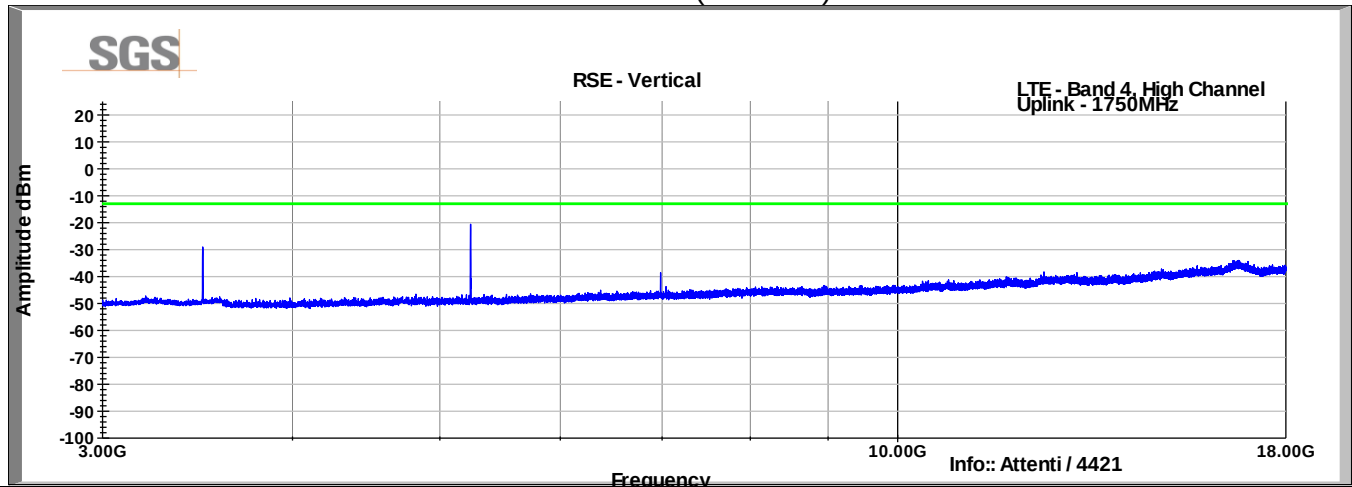
Horizontal Data (30-3000MHz)



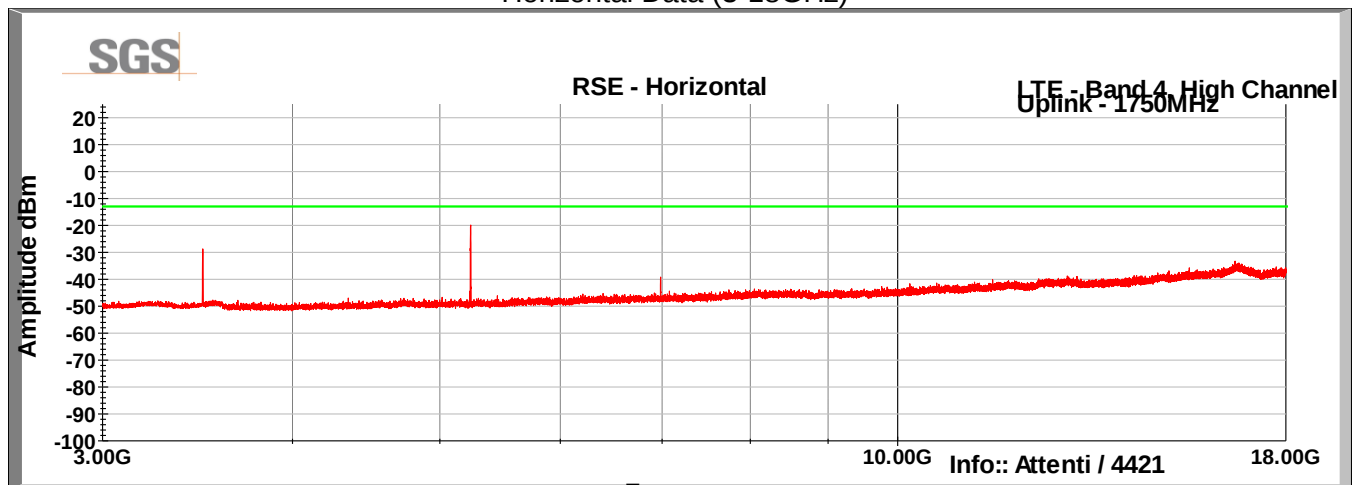
LTE Band 4

High Channel (20393)

Vertical Data (3-18GHz)



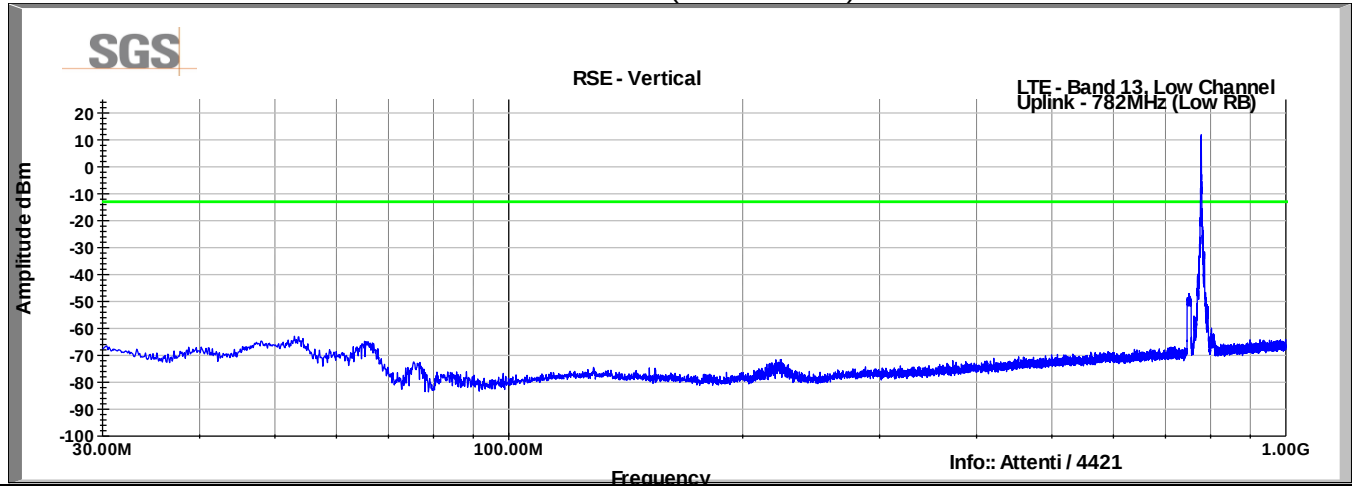
Horizontal Data (3-18GHz)



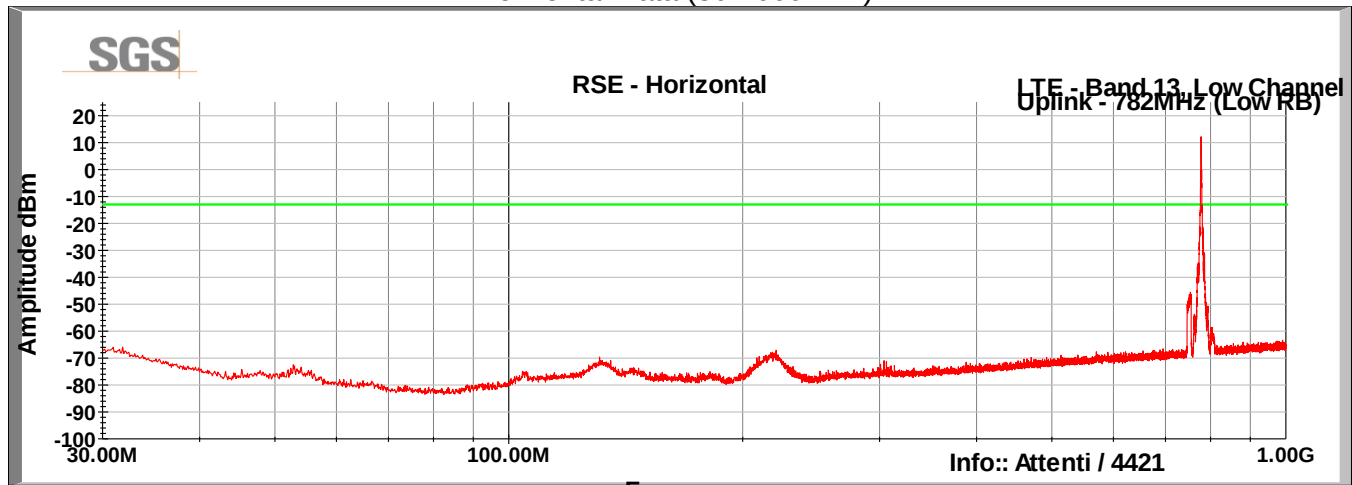
LTE Band 13

Low Channel (23205)

Vertical Data (30-1000MHz)



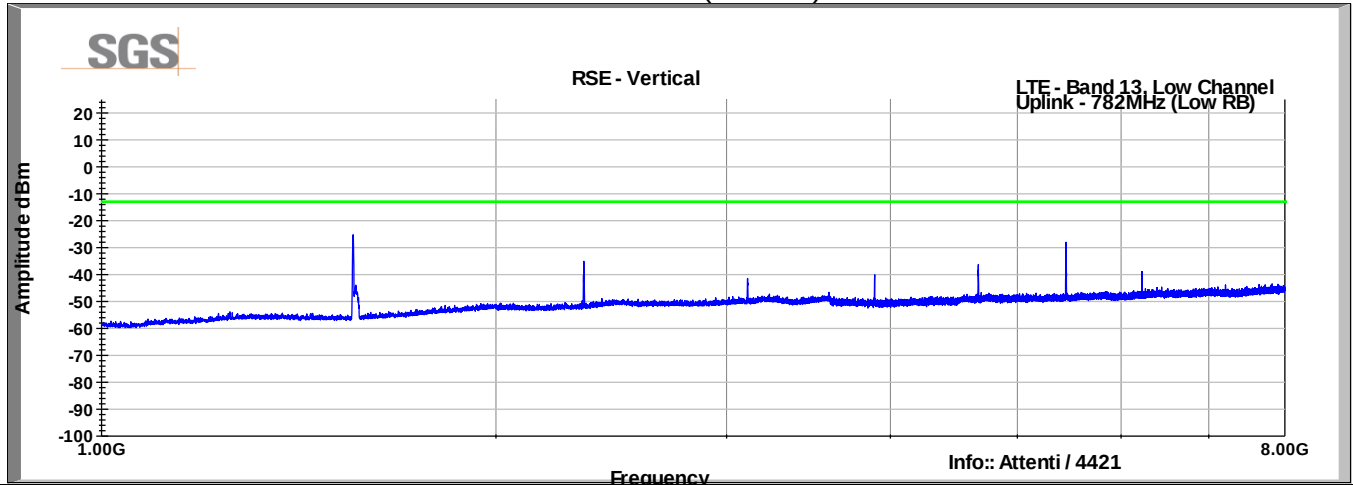
Horizontal Data (30-1000MHz)



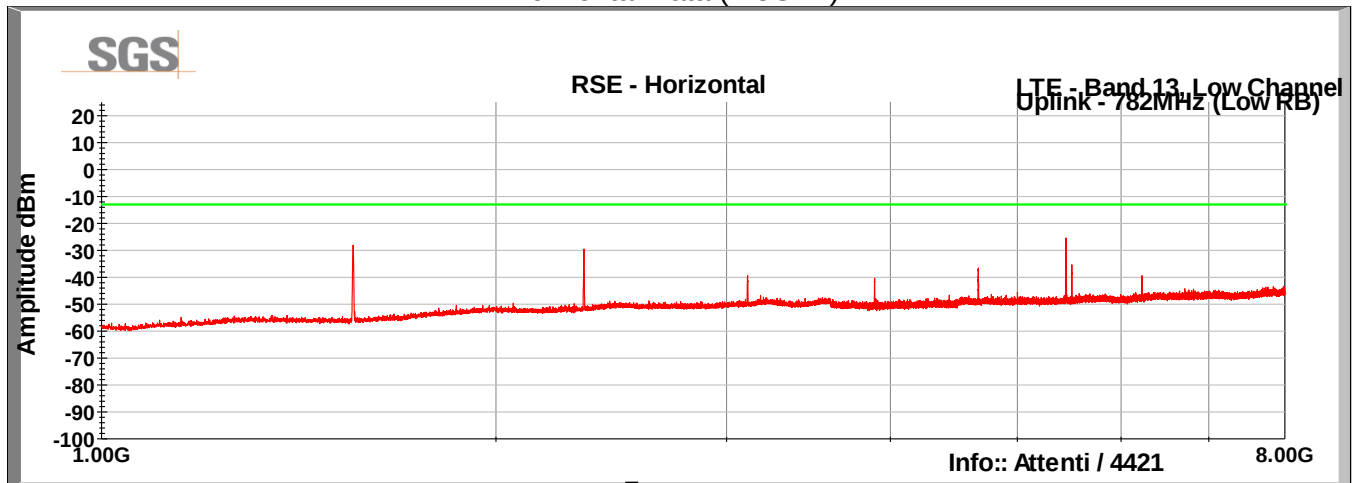
LTE Band 13

Low Channel (23205)

Vertical Data (1-8GHz)



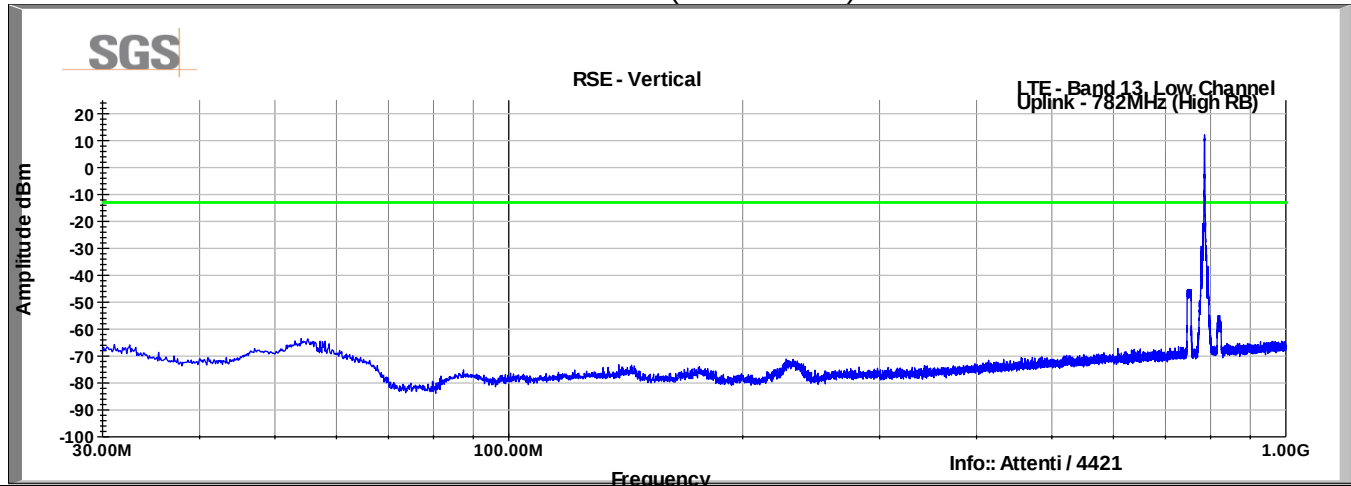
Horizontal Data (1-8GHz)



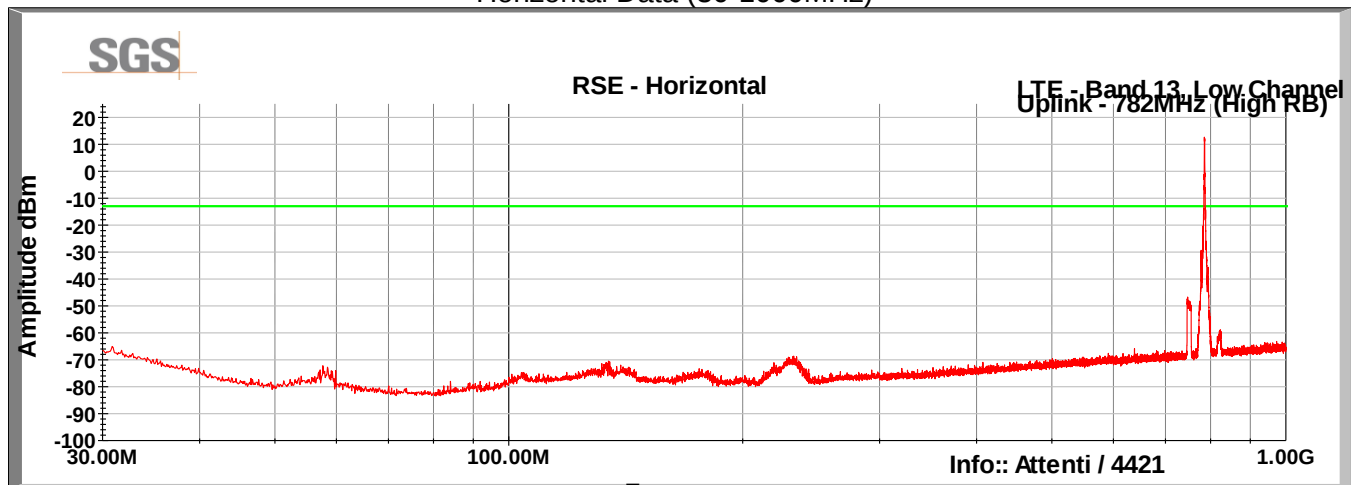
LTE Band 13

High Channel (23255)

Vertical Data (30-1000MHz)



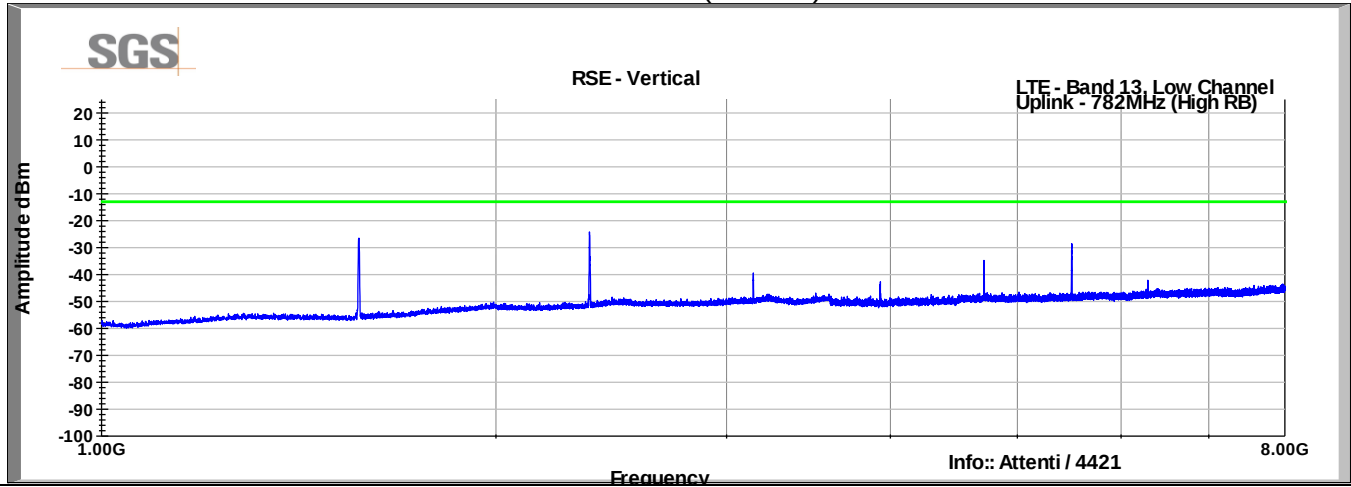
Horizontal Data (30-1000MHz)



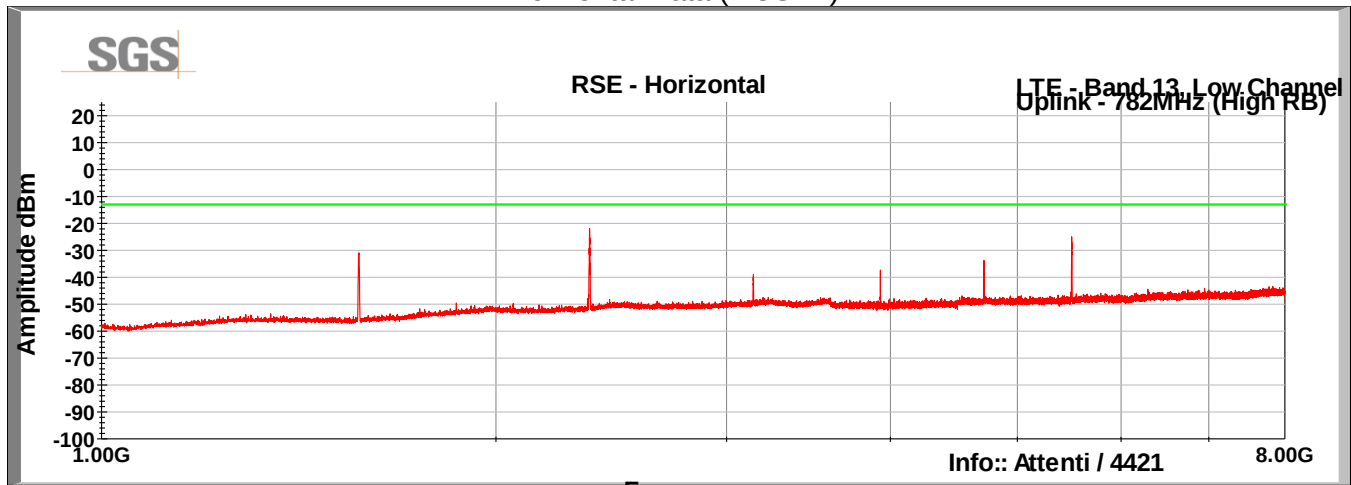
LTE Band 13

High Channel (23255)

Vertical Data (1-8GHz)



Horizontal Data (1-8GHz)



4 Revision History

Revision Level	Description of changes	Revision Date
0	Initial release	19 February 2018